REMARKS/ARGUMENTS

The drawings were objected to for failing to show every feature of the invention specified in the claims. Claim 24 was objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Claims 24 to 26 were rejected under 35 U.S.C. 112, second paragraph, as being indefinite. Claims 17 to 20 and 27 to 31 were rejected under 35 U.S.C. 102(b) as being anticipated by Ford Motor Company, Ltd. (GB 1,470,949) (hereinafter "Ford"). Claims 21 to 26 were rejected under 35 U.S.C. 103(a) as being unpatentable over Ford in view of Sugihara et al. (U.S. 5,554,338).

Claims 17, 21, 24, 27, 29 and 31 have been amended and new claims 32 and 33 have been added to more particularly and distinctly claim the invention. Claims 20 and 30 have been canceled.

Reconsideration of the application is respectfully requested.

Objection to the drawings

The drawings were objected to for failing to show every feature of the invention specified in the claims. Specifically, the Examiner noted that the rectangular boxes in Fig. 1 were not labeled.

A replacement sheet of drawings including amended Fig. 1 is submitted herewith including labeled rectangular boxes.

Withdrawal of the objection to the drawings is respectfully requested.

Claim objection

Claim 24 was objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim.

Claim 24 has been amended to depend from claim 17 and is now submitted as being in proper dependent form.

Withdrawal of the objection to claim 24 is respectfully requested.

Rejections under 35 U.S.C. 112, second paragraph

Claims 24 to 26 were rejected under 35 U.S.C. 112, second paragraph, as being indefinite.

Claim 24 has been amended to depend from claim 17 and is now submitted as being clear and definite.

Withdrawal of the rejections under 35 U.S.C. 112, second paragraph, of claim 24, and claims 25 and 26 depending therefrom, is respectfully requested.

Rejections under 35 U.S.C. 102(b)

Claims 17 to 20 and 27 to 31 were rejected under 35 U.S.C. 102(b) as being anticipated by Ford. Claim 17 has been amended to include the limitations of claim 20.

Ford discloses a method of making a duo-density silicon nitride article. In particular, a method is provided for creating a rotor for a gas turbine engine. (Page 1, lines 69 to 75). A blade ring 10 may be created by an injection molding technique. (Page 2, lines 59 to 61). Blade ring 10 is a finished body of silicon nitride having a plurality of blades 12 attached to a support portion 14. (Page 2, lines 121 to 125). After blade ring 10 is formed, blade ring 10 is then encapsulated, leaving only a bonding surface 16 exposed, to form a silicon nitride body 20. (Page 3, lines 4 to 35). The silicon nitride body 20 is placed in a pressing die structure 22 such that bonding surface 16 of body 20 helps define a volume of pressing die structure 22 in which a silicon nitride powder 42 is poured. (Page 3, lines 45 to 60, lines 86 to 97). The material in the defined volume is hot pressed to form a hub 44 and simultaneously bound hub 44 to bonding surface 16 of body 20. (Page 3, lines 45 to 60, lines 86 to 97). The encapsulation of body 20 is later removed and the finished article (blade ring 10 bonded to hub 44) can be used as a rotor for a gas turbine engine. (Page 2, line 127 to page 4, line 19).

Claim 17 recites "[a] method for manufacturing vane segments for a gas turbine comprising the steps of:

providing a plurality of vanes,

manufacturing a vane segment from the plurality of vanes via powder metallurgy injection molding, the step of manufacturing including the steps of:

mixing a metal powder having a binding agent to form a homogeneous material;

forming at least one molded body from the homogeneous material via injection molding,

subjecting the at least one molded body to a debinding process, and

compressing the at least one molded body via sintering to form the vane segment."

It is respectfully submitted that Ford does not disclose "compressing the at least one molded body via sintering to form the vane segment" as recited in claim 20. The Examiner asserts that Ford, at page 2, lines 83 to 86, discloses the "compressing" step of claim 20; however, nowhere in the cited portion of Ford is any compressing mentioned, in particular compressing "via sintering" as required by claim 20. This portion of Ford merely relates to removing the thermoplastic binder. The "compressing" step of claim 20 requires a step that is distinct from the step described in Ford, at page 2, lines 83 to 86.

Withdrawal of the rejection under 35 U.S.C. 102(b) of claim 17, and claims 18, 19, 27 and 28 depending therefrom, is respectfully requested.

Claim 29, as amended, recites "[a] component for a gas turbine of an aircraft engine, comprising

a guide vane segment manufactured from a plurality of guide vanes via powder metallurgy injection molding."

It is respectfully submitted that Ford does not disclose "a guide vane segment manufactured from a plurality of guide vanes via powder metallurgy injection molding" as recited in claim 29. Ford discloses a method for forming a blade ring 10 and a hub 44 and bonding the two to create a rotor for a gas turbine. It is respectfully submitted that Ford does not disclose a "guide vane segment" or any "guide vanes" as required by claim 29. As clearly known to one of skill in the art, rotor blade ring 10 of Ford is distinct from a "guide vane segment" and the rotor blades of rotor blade ring 10 of Ford are not "guide vanes."

Withdrawal of the rejection under 35 U.S.C. 102(b) of claim 29, and claim 31 depending therefrom, is respectfully requested.

Claim 18 recites "[t]he method as recited in Claim 17, wherein the vane segment is designed as a guide vane segment and includes at least two guide vanes."

Claim 19 recites "[t]he method as recited in Claim 18, wherein the guide vane segment includes three or four guide vanes."

With further respect to claims 18 and 19, it is respectfully submitted that Ford does not disclose a "guide vane segment" or any "guide vanes" as required by claims 18 and 19. As clearly known to one of skill in the art, rotor blade ring 10 of Ford is distinct from a "guide vane segment" and the rotor blades of rotor blade ring 10 of Ford are not "guide vanes."

For this reason also, withdrawal of the rejection under 35 U.S.C. 102(b) of claims 18 and 19 is respectfully requested.

Rejections under 35 U.S.C. 103(a)

Claims 21 to 26 were rejected under 35 U.S.C. 103(a) as being unpatentable over Ford in view of Sugihara et al. (U.S. 5,554,338).

Ford is described above.

Sugihara et al. discloses a method of preparing a composite sintered body. An inner composite powder compact and an outer composite powder compact are brought into fit with each other and sintered. (Col. 2, lines 24 to 29).

Claim 21 recites "[t]he method as recited in Claim 20, wherein, in that in order to manufacture one vane segment from at least two vanes,

a molded body for each vane is manufactured separately via injection molding, and

the molded bodies are joined together prior to the debinding process to form one molded body for the vane segment."

Sugihara et al. in no way teaches or discloses manufacturing vane segments for a gas turbine of an aircraft engine and thus cannot cure the deficiencies of Ford with respect to claims 17 and 20, from which claim 21 depends.

Furthermore, it is respectfully submitted that neither Ford nor Sugihara et al. discloses "a molded body for each vane is manufactured separately via injection molding" as recited in claim 21 and it would not have been obvious to one of skill in the art to have combine the references to meet this limitation. In fact, the process in Ford specifically requires that rotor blades are formed together as a ring and thus teaches away from manufacturing molded bodies separately. Thus,

one of skill in the art would not have modified Ford in view of Sugihara et al. to meet the limitations of claim 21.

Also, it is respectfully submitted that Sugihara et al. in no way discloses any "debinding process" and thus, contrary to the Examiner's assertion, Sugihara et al. in no way teaches or discloses "the molded bodies are joined together prior to the debinding process" as recited in claim 21. It is also respectfully submitted that the Examiner is in error for failing to specifically or even generally identify any portion of Sugihara et al. teaching or disclosing this limitation.

In view of this and the above arguments with respect to why claims 17 and 20 are not anticipated by Ford, withdrawal of the rejection under 35 U.S.C. 103(a) of claim 21, and claims 22 and 23 depending therefrom, is respectfully requested.

Claim 24, as amended, recites "[t]he method as recited in Claim 20, wherein, in that to manufacture one vane segment from at least two vanes:

a molded body for each vane is manufactured separately via injection molding,

the molded bodies for the vanes undergo separate debinding processes, and

the molded bodies for the vanes are subsequently joined together to form one molded body for the vane segment."

Sugihara et al. in no way teaches or discloses manufacturing a vane segment and thus cannot cure the deficiencies of Ford with respect to claims 17, from which claim 24 depends.

Furthermore, it is respectfully submitted that neither Ford nor Sugihara et al. discloses "the molded bodies for the vanes undergo separate debinding processes" as recited in claim 24 and it would not have been obvious to one of skill in the art to have combine the references to meet this limitation. It is respectfully submitted that Sugihara et al. in no way discloses any "debinding process" and thus, Sugihara et al. cannot disclose this limitation of claim 24.

In view of this and the above arguments with respect to why claims 17 are not anticipated by Ford, withdrawal of the rejection under 35 U.S.C. 103(a) of claim 24, and claims 25 and 26 depending therefrom, is respectfully requested.

New Claims

New claims 32 and 33 have been added. Support is found in the specification at paragraphs [0016] and [0022], for example. It is respectfully submitted that claims 32 and 33 are patentable over the cited references. For example, neither reference discloses "the at least two guide vanes are connected via an inner cover band and an outer cover band," as recited in claim 32, or "manufacturing a guide vane segment from the plurality of vanes via powder metallurgy injection molding," as recited in claim 33.

Allowance of new claims 32 and 33 is respectfully requested.

CONCLUSION

The present application is respectfully submitted as being in condition for allowance and applicants respectfully request such action.

Respectfully Submitted,

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